



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,602	09/17/2001	Petri Ahonen	324-010512-US(PAR)	8277

2512 7590 06/07/2004

PERMAN & GREEN
425 POST ROAD
FAIRFIELD, CT 06824

EXAMINER

VO, HUYEN X

ART UNIT	PAPER NUMBER
----------	--------------

2655

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/954,602

Applicant(s)

AHONEN, PETRI

Examiner

Huyen Vo

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/17/2001.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-24 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 9/17/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4-5.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6-10, 12, 17-21, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wigren et al. (US Patent No. 5572622) in view of Wood et al. (US Patent No. 6092230).

1. Regarding claim 1, Wigren et al. disclose a method of processing a speech frame in a radio system, comprising:

channel-decoding a speech frame having propagated over a radio path (*col. 4, ln. 10-35, this application is related to signals in a radio communication system*);

if the speech frame is free of defects on the basis of the channel-decoding, it is inferred from the value of at least one speech parameter in the channel-decoded speech frame whether the speech frame contains speech that is decodable by means of a speech decoder (*figure 2, if the frame is free of error, it is send to the decoder for decoding*),

and if, according to the inference, the speech frame does contain speech that is decodable by means of a speech decoder, the speech frame is decoded by means of a

speech decoder (*Loop S of figure 2 and decoder 40 of figure 1, the speech frame is repaired in loop S and forward to decoder 40 for decoding*).

Wigren et al. do not disclose that if, according to the inference, the speech frame does not contain speech that would be decodable by means of a speech decoder, the speech frame is not decoded. However, Wood et al. teach that if, according to the inference, the speech frame does not contain speech that would be decodable by means of a speech decoder, the speech frame is not decoded (*col. 6, ln. 61 to col. 7, ln. 15, by muting the frames*). The advantage of using the teaching of Wood et al. in Wigren et al. is to save transmitting and processing power.

Since Wigren et al. and Wood et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Wigren et al. by incorporating the teaching of Wood et al. in order to save transmitting and processing power.

2. Regarding claims 12 and 23-24, Wigren et al. disclose a radio system, a mobile station in a radio system, and a network of a radio system (*col. 1, ln. 11-18, a digital cellular system includes different types of radio systems*) comprising:

a channel decoder for channel-decoding a channel-coded speech frame having propagated over a radio path (element 24 of figure 2);

a speech decoder for decoding the speech frame (element 40 of figure 2); and

inferring means for inferring from the value of at least one speech parameter in the channel-decoded speech frame whether the speech frame contains speech that is

decodable by means of the speech decoder if the speech frame is free of defects according to the channel decoder (*element 102 of figure 2, if the frame is free of error, it is send to the decoder for decoding*); and

the speech decoder is arranged to decode the speech frame if, according to the inference, the speech frame does contain speech that is decodable by means of the speech decoder (*Loop S of figure 2 and decoder 40 of figure 1, the speech frame is repaired in loop S and forward to decoder 40 for decoding*); and

Wigren et al. do not disclose that the speech decoder is arranged not to decode the speech frame if, according to the inference, the speech frame does not contain speech that would be decodable by means of the speech decoder. However, Wood et al. teach that the speech decoder is arranged not to decode the speech frame if, according to the inference, the speech frame does not contain speech that would be decodable by means of the speech decoder (*col. 6, ln. 61 to col. 7, ln. 15, by muting the frames*). The advantage of using the teaching of Wood et al. in Wigren et al. is to save transmitting and processing power.

Since Wigren et al. and Wood et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Wigren et al. by incorporating the teaching of Wood et al. in order to save transmitting and processing power.

3. Regarding claims 6-10 and 17-21, Wigren et al. further disclose that the symbols in the speech frame that are protected by channel coding are also used in the inference

(col. 4, ln. 39-47) and the inference is performed by utilizing probability calculation (col. 4, ln. 39-47, soft information is the probability), wherein in the inference the probability of the value of at least one speech parameter is calculated (col. 5, ln. 4-27), the probability of change in the value of at least one speech parameter is calculated (col. 5, ln. 4-27, parameter values are calculated and updated), and a threshold value has been defined for the probability of change in the value of a parameter during a given number of speech frames (col. 5, ln. 5-27, thresholds are automatically updated).

Claims 2-5 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wigren et al. (US Patent No. 5572622) in view of Wood et al. (US Patent No. 6092230) and further in view of Dunlop et al. (Digital Mobile Communications and the TETRA System, John Wiley & Sons Limited 1999, ISBN 0-471-98792-1, pages 261-263).

4. Regarding claims 2-3 and 13-14, the modified Wigren et al. do not disclose that the speech frame is encrypted, whereby decryption of the speech frame is performed in the method and decrypting the speech frame after the channel-decoding, prior to the inference. However, Dunlop et al. teach that the speech frame is encrypted, whereby decryption of the speech frame is performed in the method (figure 7.4 page 263) and decrypting the speech frame after the channel-decoding, prior to the inference (figures 7.2 and 7.4 on pages 261 and 263). The advantage of using the teaching of Dunlop et al. in the modified Wigren et al. is to enhance communication security.

Since the modified Wigren et al. and Dunlop et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Wigren et al. by incorporating the teaching of Dunlop et al. in order to enhance communication security.

5. Regarding claims 4 and 15, the modified Wigren et al. do not disclose that according to the inference, the speech frame does not contain speech that would be decodable by means of a speech decoder, a bad frame indication is sent to the speech decoder and a homing sequence is sent to the speech decoder. However, Wood et al. further disclose that that according to the inference, the speech frame does not contain speech that would be decodable by means of a speech decoder, a bad frame indication is sent to the speech decoder (col. 6, ln. 1-24 or *output of element 406 of figure 4, the BFI is used to correct the corrupted frame for the decoder*). The advantage of using the teaching of Wood et al. in the modified Wigren et al. is to specify to the speech decoder that the frame is in errors and needed to be replaced or muted to enhance audio quality.

Since the modified Wigren et al. and Wood et al. are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Wigren et al. by incorporating the teaching of Wood et al. in order to specify to the speech decoder that the frame is in errors and needed to be replaced or muted to enhance audio quality.

6. Regarding claims 5 and 16, Wigren et al. further disclose that a homing sequence is sent to the speech decoder (*the output of Loop B or S, error is concealed for the frame and this frame is considered as a homing sequence because it eliminates audio shock at the speaker's output*).

Claims 11 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wigren et al. (US Patent No. 5572622) in view of Wood et al. (US Patent No. 6092230) and further in view of International Telecommunication Union (UTI-T) (Digital Transmission Systems – Terminal Equipments – Coding of Analogous Signals by Methods other than PCM: Series G. 729, pages 5-6).

7. Regarding claims 11 and 22, the modified Wigren et al. do not disclose that if the probability of change is lower than the threshold value, it is inferred that the speech frame does not contain speech that would be decodable by means of a speech decoder. However, UTI-T teaches that if the probability of change is lower than the threshold value, it is inferred that the speech frame does not contain speech that would be decodable by means of a speech decoder (*pages 5-6, the different of the average of energy level is compared with the threshold to determine whether the current frame is speech or background noise. Voice activity detection is well known to one of ordinary skill in the art*). The advantage of using the teaching of UTI-T in the modified Wigren et al. is to identify speech frames from non-speech frames so that the decoder can decode only speech frames to reduce processing power.

Since the modified Wigren et al. and UTI-T are analogous art because they are from the same field of endeavors, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify Wigren et al. by incorporating the teaching of UTI-T in order to identify speech frames from non-speech frames so that the decoder can decode only speech frames to reduce processing power.

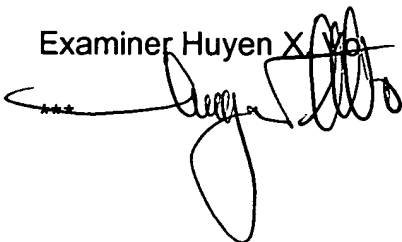
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huyen Vo whose telephone number is 703-305-8665. The examiner can normally be reached on M-F, 9-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 703-305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner Huyen X. Vo



May 18, 2004



DORIS H. TO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800